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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/977,880

10/15/2001

Barry Charles Holdstock

674515-2003 (3038-013)

3435

81693 7590 09/19/2008

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EXAMINER

CHEUNG, WILLIAM K

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

09/19/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 09/977,880	<b>Applicant(s)</b> HOLDSTOCK ET AL.	
	<b>Examiner</b> WILLIAM K. CHEUNG	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-6,9-26,29 and 30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,9-26,29 and 30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Request for Continued Examination***

1. The request filed on September 2, 2008 for a Request for Continued Examination (RCE) under 37 CFR 1.53(d) based on parent Application No. 09/977,880 is acceptable and a RCE has been established. An action on the RCE follows.
2. In view of the amendment filed August 22, 2008, claims 7, 8, 27, 28 have been cancelled. Claims 1-6, 9-26, 29, 30 are pending.
3. In view of the amendment filed August 22, 2008, the rejection of Claim 27 under 35 U.S.C. 112, first paragraph, is withdrawn.
4. In view of the amendment filed August 22, 2008, the rejection of Claims 1-6, 9-26, 29, 30 under 35 U.S.C. 103(a) as being unpatentable over Mancini et al. (US 4,056,496) in view of Mitra et al. (US 5,212,015) as evident in Goto et al. (US 3,845,164), and Williamson et al. (US 6,239,298), is withdrawn.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

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the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

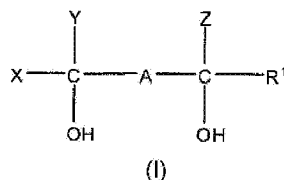
USPQ 459 (1966), that are applied for establishing a background for determining

obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
6. Claims 1-6, 9-26, 29, 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mancini et al. (US 4,056,496) in view of Mitra et al. (US 5,212,015) as evident in Goto et al. (US 3,845,164), and Williamson et al. (US 6,239,298), further in view of Rohm and Haas, product data sheet on Amberjet product (November 1998).

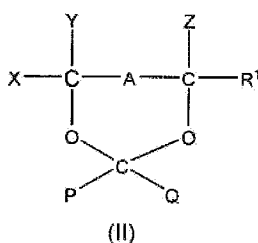
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1. (Currently amended). A process for the preparation of a polymerizable composition comprising polymerizable monomer of formula I:



said process comprising the steps of:

(i) contacting a compound of formula II



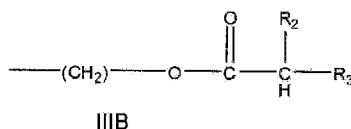
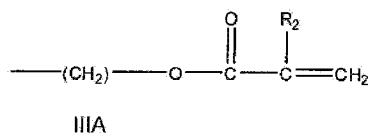
with an immobilized acid to thereby form a composition comprising the monomer of formula (I) and an acid by-product thereof,

wherein

X, Y, Z, P, and Q are independently selected from a hydrocarbyl group or hydrogen,

A is  $(\text{CH}_2)_n$ , wherein n is 0 or 1;

$\text{R}^1$  corresponds to either formula IIIA or formula IIIB



where  $\text{R}_2$  is selected from the group consisting of H, methyl, ethyl, propyl, and butyl, and

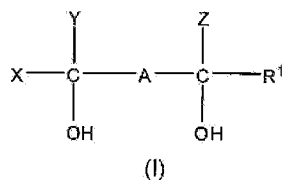
and

$\text{R}_3$  is an unsaturated  $\text{C}_{2-5}$  alkyl; and

(ii) neutralizing the composition of step (i) with an immobilized hydroxide, to thereby provide a composition comprising the monomer of formula I and a cross-linker.

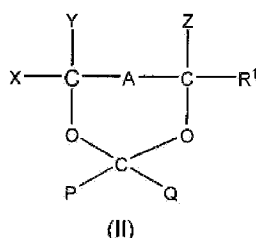
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22. (Currently amended) A process for the preparation of a polymerizable composition comprising a polymerizable monomer of formula I:



said process comprising the steps of:

(i) contacting a compound of formula II

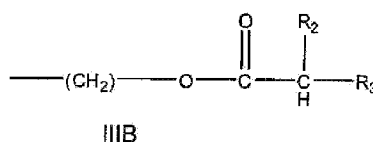
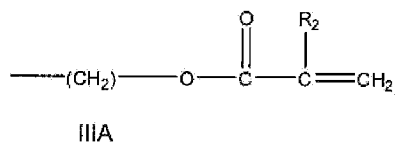


with an immobilized acid, having a  $\text{pK}_a$  of less than 3 to thereby form a composition comprising the monomer of formula (I) and an acid by-product thereof, wherein

X and Y are independently selected from hydrocarbon groups having 1 to 20 carbon atoms and hydrogen,

Z, P, and Q are independently selected from a hydrocarbonyl group or hydrogen, A is  $(\text{CH}_2)_n$ , wherein n is 0 or 1;

$\text{R}^1$  corresponds to either formula IIIA or formula IIIB



where  $\text{R}_2$  is selected from the group consisting of H, methyl, ethyl, propyl, and butyl, and

and

$\text{R}_3$  is an unsaturated  $\text{C}_{2-5}$  alkyl; and

(ii) neutralizing the composition of step (i) with an immobilized hydroxide, to thereby provide a composition comprising the monomer of formula I and a cross-linker.

Mancini et al. (col. 3, line 32-48) disclose the deketalization of a compound that is substantially identical to the chemical of Formula II as claimed with a strong acid.

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Mancini et al. (col. 3, line 50 to col. 4, line 3) in example 1 clearly indicate the use of concentrated sulfuric acid for the deketalization process, which is also followed by a filtration process.

The difference between the invention of claims 1-6, 9-26, 29, 30 and Mancini et al. is that Mancini et al. are silent on using an immobilized acid for the disclosed deketalization process.

Mitra et al. (col. 18, Example 21) disclose a process to deketalize an organic compound. Since both Mancini et al. and Mitra et al. are both related to the same endeavor of deketalizing organic compounds, it would have been obvious to one of ordinary skill in art to appreciate and combine the deketalization teachings in Mitra et al. and Mancini et al. Further, motivated by the expectation of success of obtaining compounds that are of high purity with Amberlyst-15, which is an immobilized acid (Mitra et al., col. 18, Example 21) comprising sulfonic acid functionalities which are highly acidic by nature, it would have been obvious to one of ordinary skill in art to incorporate the immobilized acid teachings of Mitra et al. into Mancini et al. to obtain the invention of claims 1-6, 9-26, 29, 30.

Regarding the claimed side reaction products, an acrylic acid and a crosslinker, applicants must recognize that deketalized product of Mancini et al. are prompt to side reactions in the presence of a strong acid such as the concentrated sulfuric acid of Mancini et al. or the Amberlyst-15 of Mitra et al. In the presence of a strong acid, the hydrolysis of the deketalized product of Mancini et al. would readily lead to the formation of acrylic acid or methacrylic acid as claimed, which is affirmed by the reference to Goto

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et al. (col. 4, line 34-37). After reviewing the reference to Goto et al., it would not be difficult to one of ordinary skill to recognize that the deketalization of Mancini et al. comprises side reaction products, such as acrylic acid or methacrylic acid as claimed.

In view of the reasons set forth above, reaction mixture as disclosed in Mancini et al. clearly disclose a reactive mixture comprising deketalized product of Mancini et al. and acrylic acid or methacrylic acid. In view of the teachings of Williamson et al. (col. 2, line 40-49), it is clearly that the esterification reaction can readily occur between an alcohol (glycerol) and a free carboxylic acid (acrylic acid) in the presence of a strong acid (sulfuric acid) (col. 3, line 9-14). Therefore, after reviewing the reference to Williamson et al. it would not be difficult to one of ordinary skill to recognize the esterification reaction product produced by the reaction of the deketalization of Mancini et al. with the side reaction products, such as acrylic acid or methacrylic acid, to obtain the crosslinker as claimed.

Regarding the claimed "0.50 percent or less of crosslinker" of claim 23, the "essentially quantitative conversion" of claim 25, the "5% or less of a polymer formed by polymerization of said crosslinker" of claim 26, in view of the substantially identical type of reaction as disclosed in the prior art and the reaction type as claimed, the examiner has a reasonable basis that the claimed amount of side reaction product or the "essentially quantitative conversion" are inherently possessed in Mancini et al. and Mitra et al.



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The difference between the invention of claims 1-6, 9-26, 29, 30 and Mancini et al. is that Mancini et al. are silent on using an immobilized hydroxide for neutralizing the reaction product.

The Rohm and Haas product literature (page 1, first paragraph) teaches that when an immobilized acid (Amberjet 1500H) is used, it would also be good to use Amberjet 4400 OH to neutralize the medium (reducing the acidity) for regeneration purposes. Motivated by the expectation of success of reducing the acid content in the final product of Mancini et al., it would have been obvious to one of ordinary skill in art to employ the Amberjet 4400 OH teachings (or an immobilized hydroxide) as taught in the Rohm and Haas product literature into Mancini et al. to obtain the immobilized hydroxide feature as claimed.

Applicants must recognize that Mancini et al. (col. 3, line 50-64) clearly express the desire to reduce the acidity of the reaction by washing the reaction product with water. Since water can be considered a base relative to sulfuric acid, and water (H-O-H) possesses a hydroxyl group as well, the examiner has a reasonable basis that the washing step of Mancini et al. can be considered a neutralization step as well.

### **Response to Arguments**

Applicant's arguments filed August 22, 2008 have been fully considered but they are not persuasive.

Regarding applicants' request to reconsider the argument set forth September 14, 2007, Applicant's arguments filed September 14, 2007 have been fully considered but they are not persuasive.

Applicants argue that Mitra et al., Goto et al., and Williamson et al. are non-analogous art that can not be used to make up the deficiency on the teachings of Mancini et al. However, the examiner disagrees because the prior art Mitra et al. shares the common endeavors of using dektalized organic compounds with Mancini et al. Regarding Goto et al., and Williamson et al., they are merely references used as evidence for affirming the chemistry rationale set forth for the rejection with Mancini et al. and Mitra et al. When a reference is used for affirmation purposes, there is no need for a motivational statement.

Regarding applicants' argument that Mancini et al. and Mitra et al. do not teach the side product of the claimed process, applicants must recognize that Mancini et al. (col. 3, line 44) clearly disclose the hydrolysis of dioxolanoalkyl acrylate or methacrylate, which is substantially identical to the chemical structure (II) of claim 1. Therefore, in view of the substantially identical hydrolysis reaction catalyzed by an acid and for the same rationale set forth by applicants relating to the claimed side reaction product of claim 24, the examiner has a reasonable basis that the argued side product of claim 24 is inherently possessed by Mancini et al.

Regarding applicants argument that the working examples of Mancini et al. do not teach the side products being claimed, Applicants fail to recognize that the examiner is not restricted to use the working examples of Mancini et al. for a rejection. The non-

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preferable or less preferable embodiment of the prior art can also be used for a rejection.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Regarding the argued advantages of the claimed invention, applicants fail to provide any comparative data to show the argued advantage.

Regarding the newly introduce "immobilized hydroxide" feature, the Rohm and Haas product literature (page 1, first paragraph) teaches that when an immobilized acid (Amberjet 1500H) is used, it would also be good to use Amberjet 4400 OH to neutralize the medium (reducing the acidity) for regeneration purposes. Motivated by the expectation of success of reducing the acid content in the final product of Mancini et al., it would have been obvious to one of ordinary skill in art to employ the Amberjet 4400 OH teachings (or an immobilized hydroxide) as taught in the Rohm and Haas product literature into Mancini et al. to obtain the immobilized hydroxide feature as claimed. Applicants must recognize that Mancini et al. (col. 3, line 50-64) clearly express the desire to reduce the acidity of the reaction by washing the reaction product with water.

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Since water can be considered a base relative to sulfuric acid, and water (H-O-H) possesses a hydroxyl group as well, the examiner has a reasonable basis that the washing step of Mancini et al. can be considered a neutralization step as well.

In view of the reasons set forth above, the instant rejection is proper.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William K. Cheung whose telephone number is (571) 272-1097. The examiner can normally be reached on Monday-Friday 9:00AM to 2:00PM; 4:00PM to 8:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David WU can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/William K Cheung/

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Primary Examiner, Art Unit 1796

William K. Cheung, Ph. D.

Primary Examiner

September 12, 2008